

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) An isolated mutant water-soluble glucose dehydrogenase having pyrroloquinoline quinone as a coenzyme, wherein said mutant is a mutant of a glucose dehydrogenase comprising the amino acid sequence of SEQ ID NO:1, and wherein said mutant consists of an amino acid substitution selected from the group consisting of:

(1) glutamine at position ~~192~~ (~~168th~~ 168 ~~glutamine~~ of SEQ ID NO:1[~~1~~]) is substituted with glycine, glutamic acid, leucine, phenylalanine, serine or aspartic acid ~~in SEQ ID NO:1~~, optionally combined with (a) a substitution wherein aspartate at position ~~167~~ (~~143rd~~ 143 ~~aspartate~~ of SEQ ID NO:1[~~1~~]) is substituted with glutamic acid ~~in SEQ ID NO:1~~ or (b) a substitution wherein asparagine at position ~~452~~ (~~428th~~ 428 ~~asparagine~~ of SEQ ID NO:1[~~1~~]) is substituted with threonine ~~in SEQ ID NO:1~~;

(2) leucine at position ~~193~~ (~~169th~~ 169 ~~leucine~~ of SEQ ID NO:1[~~1~~]) is substituted with alanine, glycine, methionine, tryptophan or lysine ~~in SEQ ID NO:1~~, optionally combined with (a) a substitution wherein aspartate at position ~~167~~ (~~143rd~~ 143 ~~aspartate~~ of SEQ ID NO:1[~~1~~]) is substituted with glutamic acid ~~in SEQ ID NO:1~~ or (b) a substitution wherein asparagine at position ~~452~~ (~~428th~~ 428 ~~asparagine~~ of SEQ ID NO:1[~~1~~]) is substituted with threonine ~~in SEQ ID NO:1~~; and

(3) aspartate at position ~~167~~ (~~143rd~~ 143 ~~aspartate~~ of SEQ ID NO:1[~~1~~]) is substituted with glutamic acid ~~in SEQ ID NO:1~~, and asparagine at position ~~452~~ (~~428th~~ 428 ~~asparagine~~ of SEQ ID NO:1[~~1~~]) is substituted with threonine ~~in SEQ ID NO:1~~.

2-23. (Cancelled).

24. (Previously Presented) A glucose assay kit comprising the modified glucose dehydrogenase as claimed in claim 1.

25. (Previously Presented) A glucose sensor comprising the modified glucose dehydrogenase as claimed in claim 1.

26. (Currently Amended) The mutant glucose dehydrogenase as claimed in claim 1, wherein glutamine at position ~~192 (168th)~~ 168 ~~glutamine~~ of SEQ ID NO:1[[]] is substituted with glycine, glutamic acid, leucine, phenylalanine, serine or aspartic acid ~~in SEQ ID NO:1.~~

27. (Currently Amended) The mutant glucose dehydrogenase as claimed in claim 1, wherein leucine at position ~~193 (169th)~~ 169 ~~leucine~~ of SEQ ID NO:1[[]] is substituted with alanine, glycine, methionine, tryptophan or lysine ~~in SEQ ID NO:1.~~

28. (Currently Amended) The mutant glucose dehydrogenase as claimed in claim 1, wherein aspartate at position ~~167 (143rd)~~ 143 ~~aspartate~~ of SEQ ID NO:1[[]] is substituted with glutamic acid ~~in SEQ ID NO:1,~~ and asparagine at position ~~452 (428th)~~ 428 ~~asparagine~~ of SEQ ID NO:1[[]] is substituted with threonine ~~in SEQ ID NO:1.~~

29-32. (Cancelled).

33. (Currently Amended) The mutant glucose dehydrogenase as claimed in claim 1, wherein glutamine at position ~~192 (168th 168 glutamine~~ of SEQ ID NO:1[~~1~~]) is substituted with glycine, glutamic acid, leucine, phenylalanine, serine or aspartic acid ~~in SEQ ID NO:1~~, and aspartate at position ~~167 (143rd 143 aspartate~~ of SEQ ID NO:1[~~1~~]) is substituted with glutamic acid ~~in SEQ ID NO:1~~.

34. (Currently Amended) The mutant glucose dehydrogenase as claimed in claim 1, wherein glutamine at position ~~192 (168th 168 glutamine~~ of SEQ ID NO:1[~~1~~]) is substituted with glycine, glutamic acid, leucine, phenylalanine, serine or aspartic acid ~~in SEQ ID NO:1~~, and asparagine at position ~~452 (428th 428 asparagine~~ of SEQ ID NO:1[~~1~~]) is substituted with threonine ~~in SEQ ID NO:1~~.

35. (Currently Amended) The mutant glucose dehydrogenase as claimed in claim 1, wherein leucine at position ~~193 (169th 169 leucine~~ of SEQ ID NO:1[~~1~~]) is substituted with alanine, glycine, methionine, tryptophan or lysine ~~in SEQ ID NO:1~~ and aspartate at position ~~167 (143rd 143 aspartate~~ of SEQ ID NO:1[~~1~~]) is substituted with glutamic acid ~~in SEQ ID NO:1~~.

36. (Currently Amended) The mutant glucose dehydrogenase as claimed in claim 1, wherein leucine at position ~~193 (169th 169 leucine~~ of SEQ ID NO:1[~~1~~]) is substituted with alanine, glycine, methionine, tryptophan or lysine ~~in SEQ ID NO:1~~ and asparagine at position ~~452 (428th 428 asparagine~~ of SEQ ID NO:1[~~1~~]) is substituted with threonine ~~in SEQ ID NO:1~~.

37. (Currently Amended) An isolated mutant water-soluble glucose dehydrogenase having pyrroloquinoline quinone as a coenzyme, wherein said mutant is a mutant of a glucose dehydrogenase comprising the amino acid sequence of SEQ ID NO:1, and wherein said mutant comprises an amino acid substitution wherein glutamine at position ~~192~~ ^{168th} ~~168~~ 168 glutamine of SEQ ID NO:1[[[]]] is substituted with glycine, glutamic acid, leucine, phenylalanine, serine or aspartic acid ~~in SEQ ID NO:1~~.